Where is the callsign MM7QQQ transmitting from?

How often must you revalidate your licence?

What are the three licence levels?

What could you hear on 145.800MHz?

What is EIRP?

What is an insulator?

What does a balun do?

Which of these frequencies can you transmit on?

HamTrain's

Foundation Mock Tests 2025 Edition

Preparing you for your UK Foundation amateur radio exam

HamTrain's Foundation Mock Tests 2025 Edition

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Contents

Introduction	1
Studying for Foundation	4
Exam hints and tips	7
Using our mocks	10
Mock Test 1	13
Mock Test 2	21
Mock Test 3	30
Mock Test 4	39
Mock Test 5	47
Mock Test 6	55
Mock Test 1 - Answers	64
Mock Test 2 - Answers	67
Mock Test 3 - Answers	71
Mock Test 4 - Answers	74
Mock Test 5 - Answers	77
Mock Test 6 - Answers	80
Appendix A: Exam Reference Material	84
Appendix B: Syllabus Question Breakdown	89
About the author	92
And finally	93

Introduction

Welcome to HamTrain Foundation Mock Tests, created by Essex Ham. This book contains six complete mock tests designed to test your knowledge of the UK amateur radio Foundation syllabus, to prepare you for your Foundation exam.

The Essex Ham "HamTrain" team has been working hard since 2015 to make it as easy as possible to get into amateur radio. At the time of writing, we've had over 14,000 enrol on one of our free Internet-based courses, and our training material is used by clubs and groups around the UK.

As part of our free training course, we have created a pool of mock questions that are used throughout the course, and we receive frequent requests for more mock exams to help our students prepare. Extra mocks are available online, but for the first time, we're now making them available in book form, both in paperback and as an eBook.

About our mocks

The RSGB's exams are generated from a pool of questions, split across the main eight syllabus areas:

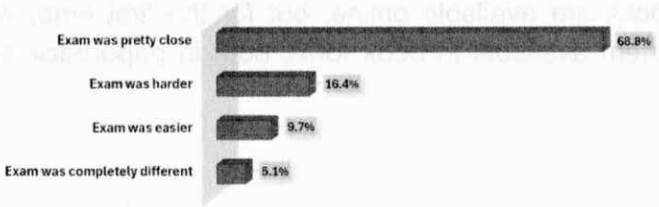
Licence Conditions	6 questions
Technical Aspects	3 questions
Transmitters and Receivers	3 questions
Feeders and Antennas	3 questions
Propagation	2 questions
EMC / Interference	3 questions
Operating Conditions	3 questions
Safety	3 questions

Our HamTrain mocks operate in the same way, questions selected from a pool of questions matching the categories and order of the questions you'll encounter in the actual exam.

RSGB's exam pool is confidential and not in the public domain, and we have worked hard to make sure our mock tests match the actual exam questions as closely as possible, based on the small number of questions released by the RSGB, feedback from students, and guidance from former RSGB insiders.

We run frequent student surveys to find out how close our mocks are to the real thing, and use the information provided by our students to make our mocks as realistic as possible.

In our most recent survey of over 620 students, here's how our mocks rated, compared to the RSGB Foundation exam:



2024 HamTrain Survey: mock tests

Books of mock questions are nothing new, but by mirroring the actual exam papers as closely as possible, and by providing information on how each answer is arrived at, we're hoping that you'll find this a useful revision tool ahead of sitting your entry-level amateur radio exam.

We've also included some additional information to help with your studies, such as a breakdown of the exam structure and copies of the information that you'll be provided with for your exam. We've also added a few study tips, although if you are just setting out on our studies, consider signing up for our free training course to make sure you're fully prepared.

All feedback is appreciated, so please contact us with your comments so that we can continue to make improvements to this book. If you'd like to send us your feedback, please use the following email address: bookfeedback@essexham.co.uk

If you find this guide useful, please consider rating it on Amazon, as this helps others to discover this book.

Pete Sipple M0PSX

Studying for Foundation

The Foundation exam consists of 26 multiple-choice questions across 8 different subjects. Even if you have prior experience in radio communications, you're still going to need to prepare yourself for the exam. Taking mock tests can certainly help you to check whether you're ready to take and pass the exam, but you're strongly advised to put in some time studying the Foundation syllabus. Not only will this help you tackle exam questions, but it will also prepare you for what you'll need to know when you get your amateur radio licence and take to the air for the first time.

Ofcom is the UK's radio regulator, and before they will give you a licence, they need to know that you understand where you can and can't transmit, and what the licence allows. That's why the exam heavily focuses on topics such as licence conditions. This part of the exam is by far the largest, carrying 6 marks, with a further 3 marks on avoiding interference and 3 more on how to operate correctly when on-the-air.

Ways to study

There are several ways to study for Foundation, including:

- Using an online course
- Watching online training videos
- Studying from a course book
- Taking a course at a local amateur radio club
- Being mentored by an existing radio amateur

Studying with HamTrain

Obviously, we're a little biased, but we'd recommend that you take a look at what Essex Ham's HamTrain Foundation Online course has to offer.

Our free online course typically runs twice a month (with a "fast track" option for those in a rush). The course is split into nine modules, covering the entire Foundation syllabus, and each module ends with a short quiz to check that you've understood the material.

The course lets you study when it's suitable for you – no live lessons, and no need for a webcam. Each module has its own fully-narrated video, so you can watch as we discuss the material and demonstrate how things work. The course also includes some additional videos covering some of the trickier subjects, plus examples of how to use amateur radio.

In our course, you'll be working in an online classroom with other students and have the option to ask questions of the tutor and chat with other students. At the end of the course, you'll find another of our mocks, this time an online mock.

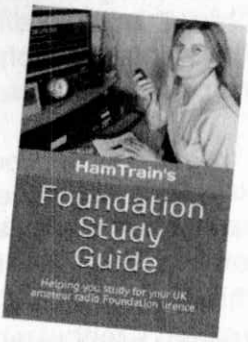
To find out more about the free Foundation Online course, and to book a place on the course, go to **www.hamtrain.co.uk**

hamtrain.co.uk
Supporting UK Ham Radio Training
Brought to you by Essex Ham
Ham Train: The Amateur Radio Training Resource
We're passionate about amateur radio, and we want to make the hobby as easy to take part in as possible. That's why we've created the "Ham Train" website.
Who's HamTrain for?
Newcomers – We offer information on how to get started, free training material, plus our free online training course that's been taken by over 12,000 students!
Tutors & Clubs – Our constantly-updated free training material includes Powerpoint slides, handouts and videos. Our online course can be used to supplement and support existing club training.
Newly-licensed – We have lots of information on how to get started once you have your licence. You can also join our free online club for updates on the hobby and a busy forum.
For Newcomers
Our most popular service is our free online Foundation Training Course, "Foundation Online" – This is aimed at those who prefer to study at their own pace via computer. Courses are short, easy-to-follow, and free. Take a look at the following short video to find out more about our course:
Foundation Online...
hamtrain.co.uk
Watch on YouTube
To sign up to our free course, which runs once a month, go to: Foundation Online – over 12,000 enrollments and counting!
Our online courses are FREE. There are no live lessons and you study at a time to suit you. Start dates:
16th
7th July
4th August
1st September
Courses run for 9 weeks, but if you have an upcoming exam booked and need to start now, we offer a "fast track" option.
You can now take your exam at home online. See online exams
Interested in getting started?
Apply here
Essex Ham Newslettter:
Looking for general updates on amateur radio? Join our free newsletter:
SIGN UP
Tutor's Newslettter:
Are you involved as a tutor / trainer? Subscribe to our newsletter:
SIGN UP

Our online course isn't the only way you can study with us. Here are other ways we can help:

- **Online videos** – For those who don't want to commit to a 3-week course, all of the course videos are freely available on YouTube – just search for "Essex Ham"

- **Foundation Study Guide** – Available in both print format (from Amazon) and for eBook platforms like Kindle, Apple Books, and Kobo, this handy book covers the entire syllabus with plenty of photos, diagrams, tables and examples. There's a glossary, some exam tips, frequently-asked questions and information on what to do once you've passed.



- **Foundation Study Guide on Audible** – Our study guide is now available as an audiobook via the Audible platform, if you'd prefer to listen to us go through the Foundation syllabus as an audiobook

- **Foundation PowerPoint Slides** – Available from the Essex Ham website, these can be printed or projected. We make these slides available for use at no charge by amateur radio clubs across the UK, so if you've been trained locally, it might be with our material.

- **Quick Revision** – We have a video, PDF and mp3 version of our Quick Reference Guide, which covers just the essentials.

- **Social media** – We run help sections on both Facebook and Discord, where you can chat with other students or ask a more experienced amateur for help and advice.

However you're studying, good luck!

Exam Hints & Tips

Here are some handy tips for tackling your Foundation amateur radio exam and getting the best result possible.

Preparation

Make sure you have studied all of the material, and if you're not sure about anything, ask, or have a look online for videos that explain the topic in more detail.

Don't wait too long between studying and sitting the exam (as you'll forget what you've learnt)

Take some mock tests (probably the reason why you've picked this book). Ideally, you shouldn't even think about booking your exam until you can regularly get 19 out of 26 questions right. Be warned, the RSGB syllabus does change from time to time, and some online mock websites out there have not been updated to the current exam syllabus. Make sure that the mocks you're taking are up-to-date and suitable for the current syllabus.

For the exam, the only material you're allowed to take into the exam itself is the RSGB's 4-page exam booklet (which we'll be discussing in the next chapter). Spend some time getting familiar with this exam booklet, especially what table does what, and how to look things up. You're also allowed a non-programmable calculator.

Extra help is potentially available during the exam for those who need it, and if you have specific requirements for the exam or a reason for needing extra help, speak to the Exam Team at the RSGB before booking your exam.

Before the exam

As well as reviewing mocks, have a quick review of the areas where you know you're weak.

Review some of the more challenging areas that might come up in the exam, for example:

- The two formula triangles
- Receiver, transmitter and SDR block diagrams
- Callsigns and Regional Secondary Locators
- The five standard antenna types

Make sure you have everything ready and are comfy. You're allowed a drink during your exam (we suggest non-alcoholic!).

Make sure you have your 4-page exam booklet, a pen, some blank paper and a calculator. No other notes are allowed in the exam.

The exam itself

Most people sit the exam online, remotely monitored over a webcam. Being in your own home, rather than in a classroom environment, helps most students to feel a little more relaxed.

If you have exam jitters, try to relax! Easier-said-than-done we know, but the amateur radio exam isn't life or death - if you don't pass the first time, who cares? You can always take it again when you're more prepared.

The exam time is one hour, which is plenty of time. Many people finish earlier, but don't be rushed. We recommend you spend at least one minute per question.

Here is what you need to do with each question:

- Read each question carefully, including every single answer – don't just pick the first one that "sounds sort of right".
- Work out which of a question's answers are definitely wrong.
- Select the answer that is MOST right, not the first one that looks right.
- Use the exam booklet every time a frequency is mentioned, to check what the rules are for that frequency.

At the end of the exam, go through all of the questions and answers again, asking yourself, "Am I sure this is the best answer?"

After the exam

If you thought one or more of the questions were unfair, tell the exam invigilator – there is a mechanism for reporting (challenging) problem questions which may be unfair (badly worded, confusing, using jargon, or just plain trick questions).

Take a note of any such question (either the wording or the question reference number) and report any such question to the Invigilator after the exam. We'd also encourage you to report the question to us, so we can challenge this with the RSGB on your behalf, and help to make sure other students are prepared.

You can report a question using this shortlink: **www.sxham.uk/report**

At the end of the exam, you'll be presented with your results, including a reference code for the questions you got wrong. You'll find a list of these codes, and what they relate to, in Appendix B of this book.

Assuming you pass, you'll get your results straight away, and the examiner will explain the next steps. Within a few days, you'll receive a pass certificate and will be able to log on to the Ofcom website, select your first callsign, and download your licence. That's when your amateur radio journey truly begins.

Using our mocks

The RSGB Foundation exam consists of 26 multiple-choice questions that have to be answered in one hour.

The next section of this book is where you'll find six complete mock tests that follow the same basic structure of the exam itself.

When tackling the mocks in this book, you'll get the best results if you treat them like the actual exam, as we outlined in the previous chapter. These mocks will help highlight areas where you may be weak, and perhaps where more study is needed.

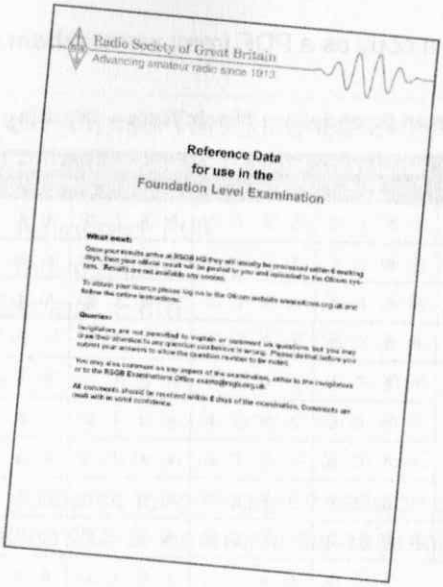
Later in the book, you'll find tables with not only the answers, but with a summary explaining why an answer is correct. If you're still not sure, go back to the training material, work through it again, and if you're still in doubt, ask your tutor or, if you're self-studying, in our Facebook or Discord groups, where help is always available.

The 4-page exam booklet

As mentioned in the previous chapter, the RSGB's 4-page booklet (called EX307) is the only material you are allowed to take into the exam. This includes the following:

Foundation Licence Parameters	A table showing what frequencies we are allowed to use by Ofcom
2m (144MHz) and 20m (14MHz) Band Plans	Two tables showing how radio amateurs divide up the bands fairly
Frequency to Wavelength Conversion Chart	This allows you to convert between frequency and wavelength without the need for a formula.
Frequency Allocation Table	A table with examples of how other users make use of various radio frequencies
dB Conversion Table	Used to convert antenna gain

See Appendix A for more details, the tables you'll find in the booklet, and the address to download a copy.


Radio Society of Great Britain
Advancing amateur radio since 1913

Reference Data
for use in the
Foundation Level Examination

What next:

Queries:

We recommend you print a copy for use when taking our mocks, as the answers to several questions require referring to the booklet.

Marking your mocks

For your convenience, we have created a downloadable marking sheet, pictured below.

You can download a copy as a PDF from: **www.sxham.uk/mark**

HamTrain Foundation Mock Tests – Marking Sheet

	MOCK TEST 1	MOCK TEST 2	MOCK TEST 3	MOCK TEST 4	MOCK TEST 5	MOCK TEST 6
1	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
2	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
3	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
4	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
5	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
6	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
7	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
8	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
9	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
10	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
11	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
12	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
13	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
14	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
15	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
16	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
17	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
18	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
19	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
20	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
21	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
22	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
23	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
24	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
25	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
26	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
	/26	/26	/26	/26	/26	/26

MOCK TEST 1

Question 1

What are the three UK Amateur Radio licence levels?

A. Beginner, Intermediate, Advanced
B. Foundation, Advanced, Full
C. Foundation, Intermediate, Full
D. Technical, General, Extra

Question 2

The recommended guidance for giving your callsign on-air is as follows: 1. When calling CQ, 2. As frequently as practicable, and...

A. When moving to a new frequency
B. When requested by another amateur
C. After each transmission
D. When increasing power

Question 3

What is the correct term for a conversation with 3 or more amateurs with whom communication and identification have been established?

A. A 'Net'
B. A 'Sked'
C. A 'CQ'
D. A 'Group'

Question 4

Who has the right to require you to modify your station?

A. The RSGB
B. Anyone authorised by Ofcom
C. Local Council Planning Officer
D. Any Category 1 User Service (including the Police)

Question 5

Which is TRUE for a frequency of 10.1MHz at Foundation?

A. It can be used on a primary basis at 1 Watt
B. It can be used on a primary basis at 25 Watts
C. It can be used on a secondary basis at 1 Watt
D. It can be used on a secondary basis at 25 Watts

Question 6

Restrictions apply for signals radiated over 10 Watts EIRP (6.1 Watts ERP). Why is this?

A. To ensure that members of the public are not exposed to EMF fields beyond set limits
B. To prevent interference with other spectrum users
C. To reduce interference with other countries
D. To protect the transmitter from damage

Question 7

Which of the following is <u>not</u> an insulator?

A. Rubber
B. Ceramic
C. Brass
D. Glass

Question 8

Which of the following frequencies would you find on the HF bands?

A. 909kHz
B. 14.070MHz
C. 145.5MHz
D. 432.6MHz

Question 9

What device is used to sample an analogue signal and produce a digital representation of it?

A. ACD
B. DAV
C. DAC
D. ADC

Question 10

The process of "Modulation" is what?

A. Ensuring that the transmitter is on the same frequency as the distant receiver
B. Adding the data or voice to be transmitted to the radio frequency carrier
C. Extracting the transmitted data or voice from the radio frequency carrier
D. Ensuring that the transmitter is on the same frequency as the local receiver

Question 11

What would be the impact of excessive frequency deviation?

A. Risk of damage to the transmitter
B. Interference to adjacent channels
C. Instability of Frequency Generator
D. Poor SWR

Question 12

In an analogue receiver, what does a detector do?

A. Tunes in to the required signal
B. Amplifies a weak signal
C. Removes the carrier
D. Detects the frequency to generate

Question 13

What does a balun do?

A. Connects the two legs of a dipole
B. Reflects signals from the long part of a Yagi (beam) antenna
C. Allows connection between a coaxial cable and a dipole
D. Balances the SWR in a long-wire antenna

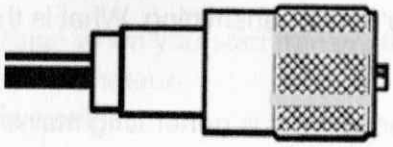
Question 14

What converts electrical signals into radio waves?

A. An Antenna
B. An Oscillator
C. A Transmitter
D. A Modulator

Question 15

What type of connector is this?



A. BNC
B. SMA
C. PL-259
D. N-Type

Question 16

The layers of conductive gases that are between 70 and 400km above the Earth are known as the

A. troposphere
B. ionosphere
C. mesosphere
D. coronasphere

Question 17

How far will a signal on 145.500MHz typically travel?

A. 1-5 km
B. Around the world
C. Just beyond line of sight
D. UK-wide

Question 18

Someone watching live TV in your house complains that the picture keeps cutting out, and they are blaming your amateur radio equipment - but you're not transmitting. What is the most likely reason?

A. Your radio equipment is generating mains interference
B. The interference is coming from a different source
C. You have not installed a filter on your transmitter
D. Your amateur radio antenna is too close to your TV's aerial

Question 19

Which antenna would typically be the most problematic in terms of causing interference?

A. Dipole
B. Yagi (beam) antenna
C. End-fed wire
D. 1/4 wave groundplane

Question 20

Where can you go to get advice on not causing interference?

A. RSGB EMC Committee Website
B. Ofcom Interference Department
C. Your District Network Operator
D. The latest ICNIRP Guidelines

Question 21

What should you not do on a frequency of 145.500MHz

A. Call CQ
B. Give your callsign when you start transmitting
C. Call for a specific amateur
D. Talk about the weather

Question 22

APRS is a data mode that allows amateurs to find each other on online maps. It works by transmitting callsign and location data over amateur radio. Which of the following frequencies is used for APRS?

A. 144.300MHz
B. 144.600MHz
C. 144.800MHz
D. 144.950MHz

Question 23

When connecting a computer to your radio to use a data mode, you must check your audio levels, and what else?

A. Correct PTT operation of the transmitter
B. That the software is up-to-date
C. The data mode software logging is enabled
D. The CTCSS tone is enabled

Question 24

Inside a UK mains plug, what does the blue wire represent?

A. Live
B. Neutral
C. Earth
D. Fuse

Question 25

What is the correct ratio for positioning a ladder against a wall?

A. 4:1 height-to-base
B. 1:4 height-to-base
C. 4:1 base-to-height
D. 4:4 base-to-height

Question 26

What is the main reason why you should never touch an antenna that is transmitting?

A. Risk of electrocution
B. May reduce SWR
C. Risk of RF burns
D. Damage to transmitter

MOCK TEST 2

Question 1

Ofcom requires you to revalidate your licence - How often?

A. At least once every 5 years
B. From time to time
C. When changing your Main Station Address
D. Annually

Question 2

Your licence requires you to ensure that your station can be identified when transmitting. Which of the following is the recommended practice for giving your callsign?

A. As often as practicable and before transmitting on a new frequency
B. When first transmitting on a frequency and at regular intervals as often as practicable
C. At least once per transmission
D. When transmitting on a new frequency and when leaving a frequency

Question 3

You hold a Foundation callsign M7QQQ. You are visited by M0ABC, who wants to use your radio with their callsign at 25 Watts. You're happy for them to use your radio, but what is the licence position?

A. They can use the callsign M0ABC under the terms of their licence
B. They can use the callsign M0ABC at 25 Watts, but only under your direct supervision
C. They can't use M0ABC, but can use M7QQQ at 25 Watts
D. The amateur radio licence does not allow this

Question 4

When are you required to keep a log of transmissions?

A. If requested by a neighbour
B. If requested by anyone from Ofcom
C. After testing or modifying your station equipment
D. When operating at a /P Temporary location

Question 5

When can a Foundation licence holder not use 14.275MHz?

A. To communicate with an amateur satellite
B. To communicate with an amateur overseas
C. Within 100km of Charing Cross in London
D. Only when adjacent frequencies are not in use by the Primary user

Question 6

The amateur radio licence includes a section on EMF. To what does this relate?

A. Ensuring that signals do not cause interference to nearby electrical devices
B. Connecting amateur radio equipment to a suitable RF earthing system
C. Not exposing members of the public to electromagnetic fields that exceed set limits
D. Making contact on internationally-agreed frequencies

Question 7

What is the formula for calculating power?

A. V x I
B. I x R
C. I / V
D. I / R

Question 8

What is the relationship between frequency and wavelength?

A. Frequency and wavelength are equal
B. As the frequency increases, the wavelength increases
C. As the frequency increases, the wavelength decreases
D. The wavelength reduces at lower frequencies

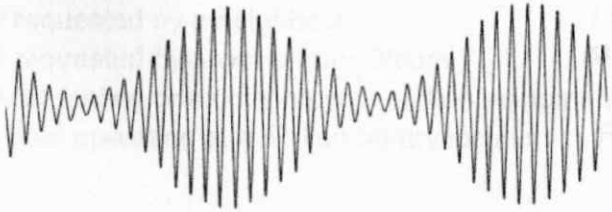
Question 9

What best defines analogue signals?

A. Signals resulting from an ADC conversion
B. A stream of signals of finite values at a specific sampling interval
C. Signals changing in amplitude and/or frequency
D. Signals produced by a computing device

Question 10

What does the following diagram represent?



A. Demodulated AM signal
B. Demodulated FM signal
C. Voice and carrier modulated by frequency
D. Voice and carrier modulated by amplitude

Question 11

A transmitter's RF power amplifier should be

A. Connected to the output of the demodulator
B. Tuned to the precise transmit frequency
C. Connected to a correctly matched antenna
D. Adjusted using the squelch control

Question 12

What is the name given to a device designed to recover information sent from one place to another using electromagnetic radiation?

A. A radio receiver
B. A modulator
C. A DAC
D. An RF power amplifier

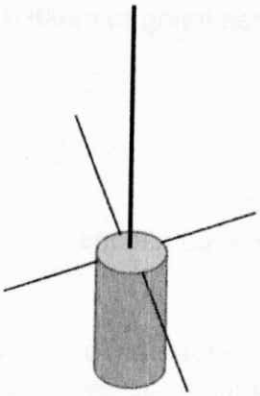
Question 13

What type of feeder is unbalanced with the signal on the centre conductor surrounded by a screen?

A. Coaxial cable
B. Twin-feeder
C. Waveguide
D. SMA

Question 14

What type of antenna is this?



A. Vertical dipole
B. 5/8 wavelength vertical
C. 1/4 wavelength ground plane vertical
D. Vertically-polarised Yagi

Question 15

After tuning your radio to a new frequency, you check the SWR of your end-fed long wire antenna. You see an SWR of 4:1. What is the most appropriate action?

A. The antenna should not be used
B. You should replace the balun
C. An AMU should be used to match the antenna
D. The antenna should only be used at low power to prevent damage to the transmitter

Question 16

Which is most critical when trying to make a contact outside of Europe from the UK?

A. Time of day
B. Day of week
C. Transmitter power
D. Good local weather conditions

Question 17

What is "Atmospheric Ducting"?

A. A type of feeder used at microwave frequencies that is dangerous to look down
B. A layer of gas that helps HF to propagate around the world
C. A condition that may extend the range of VHF and UHF signals
D. A method of contacting amateur satellites on lower HF frequencies

Question 18

Which item is most likely to be affected by signals from a nearby radio transmitter?

A. A wired home doorbell
B. An electronic calculator
C. A cordless drill
D. A domestic radio receiver

Question 19

Which of the following modulation types is least likely to cause EMC Issues?

A. AM
B. FM
C. SSB
D. FT8 data mode

Question 20

Your neighbour complains that your amateur radio antenna is interfering with his Freeview TV signal. What should you do?

A. Show him a copy of your licence to prove that you are allowed to transmit
B. Speak to your council planning officer
C. Offer to log your transmissions for comparison
D. Ask him to buy you an RF filter

Question 21

Which of the following is correct for the callsign MM7QQQ/P?

A. The station is operating from a temporary location
B. This is a UK Full licence holder
C. The operator is on the Isle of Man
D. The operator is mobile in Scotland

Question 22

Which of the following frequencies is allocated to Land Mobile?

A. 136.5MHz
B. 158.6MHz
C. 144.5MHz
D. 150.6MHz

Question 23

Why can a Foundation licence holder not operate overseas?

A. Ofcom will not know your overseas address to contact you
B. Due to radio import/export restrictions
C. Administrations in other countries do not routinely recognise the Foundation licence
D. The risk of interference to non-UK equipment

Question 24

For safety reasons, what is recommended for your home amateur radio setup?

A. A non-slip floor or floor mat
B. Correctly screened feeder cables
C. A clearly-marked 'Off' switch for your equipment
D. A powder-based fire extinguisher

Question 25

Soldering workstations must be well-ventilated. Why is this?

A. To avoid inhalation of solder fumes, which can cause breathing problems
B. To keep the soldering iron cool
C. To ensure solder splashes blow away
D. To improve visibility

Question 26

Where should antenna elements and other conductors carrying RF be sited?

A. A quarter of a wavelength above the ground
B. As close to the transmitter as possible
C. Where they can be easily accessed for maintenance
D. Where people will not come into accidental contact with them

MOCK TEST 3

Question 1

In a UK callsign, where does the regional secondary identifier "M" indicate?

A. England
B. Wales
C. Isle of Man
D. Scotland

Question 2

You change modes from FM to SSB and start transmitting. What are you required to do?

A. Note the change in your logbook
B. Give your callsign
C. Check your SWR
D. Transmit a CTCSS tone

Question 3

Transmitting messages for "general reception" is:

A. Not permitted
B. Not permitted, except for CQ calls and 'nets
C. Permitted within the UK only
D. Permitted for Primary users only

Question 4

Under which of these circumstances does Ofcom have the right to close down your amateur radio station?

A. You have not transmitted in over a year
B. You operate from a location other than your home address
C. You use a mode other than voice
D. You are in breach of your licence conditions

Question 5

Which of the following frequencies can a Foundation licence holder transmit on?

A. 7.007MHz
B. 10.155MHz
C. 21.475MHz
D. 24.880MHz

Question 6

Under the EMF section of the licence, at what power level do electromagnetic field restrictions apply?

A. 5 Watts ERP
B. 5 Watts EIRP
C. 10 Watts ERP
D. 10 Watts EIRP

Question 7

What does this electrical symbol represent?

A. Resistor
B. Switch
C. Bulb / Lamp
D. Fuse

Question 8

What would best describe a 12-volt car battery?

A. Primary AC
B. Primary DC
C. Secondary AC
D. Secondary DC

Question 9

What is required to process digital signals?

A. A modulator
B. A tuning and audio stage
C. A computing device
D. A balun

Question 10

If you were calling at 10 Watts on 14.300MHz, which mode would be the **most** efficient and appropriate?

A. AM
B. LSB
C. USB
D. Any of the above

Question 11

Another station reports that your signal is distorting. What do you do?

A. Adjust the microphone gain
B. Alter the mode of modulation
C. Check the antenna connection
D. Increase the frequency deviation

Question 12

In a basic analogue radio receiver, after the signal has been demodulated, what happens next?

A. The RF amplifier boosts the received radio signal, ready for processing
B. The audio amplifier stage boosts the signal so that it is loud enough to drive the speaker
C. The A-to-D stage converts the audio to digital
D. The user tunes to the required frequency of the signal

Question 13

Radio amateurs tend to use thicker, low-loss coaxial feeder for VHF and UHF antennas than for HF antennas. Why is this?

A. Feeder loss increases with frequency
B. It's generally less expensive
C. The antennas are usually horizontal
D. Antennas are generally longer than HF

Question 14

I have a Yagi with a gain of 3dB. If I transmit 10 Watts into that antenna, what is my ERP?

A. 10 Watts
B. 20 Watts
C. 30 Watts
D. 33 Watts

Question 15

You are operating on the 20-metre band, and you change to the 40-metre band. When you try to transmit on this new band, your transmitter shows a "high SWR" warning. What is the likely problem?

A. A fault with your transmitter
B. There is an antenna mismatch
C. Your transmitter is transmitting too much power
D. There is too much loss in your feeder cable

Question 16

Which of the following best describes the function of the Ionosphere for amateur radio?

A. It reflects VHF and UHF signals, helping signals bounce around the Earth
B. It amplifies and reflects radio energy
C. It refracts HF signals back down to Earth
D. It helps to reduce interference to weak AM signals

Question 17

Which of the following is more likely to attenuate (reduce) the range of UHF signals?

A. Snow and Ice
B. The time of day
C. Skywave propagation
D. Tropospheric ducting

Question 18

Amateur radio signals are least likely to interfere with what?

A. A microwave oven
B. A CCTV camera
C. A wi-fi router
D. A computer monitor

Question 19

Which of the following would be the best RF earth to connect to?

A. The green/yellow wire in a mains plug
B. A copper pipe on the closest radiator to the shack
C. A one-meter length of copper pipe hammered into the ground
D. A copper wire running horizontally just below the grass, from the feed point of your antenna

Question 20

You're in dispute with your neighbour about possible interference. Which of the following are worth considering?

A. Logging times of transmissions to confirm you're the cause
B. Making changes to your setup and conducting tests
C. Getting EMC advice from the RSGB
D. All of the above

Question 21

When tuning to a new frequency, you listen, and it seems quiet. Why is it important to ask "Is this frequency in use?"

A. Some amateurs have their own private channels reserved for personal use
B. It is part of your licence conditions
C. The frequency may be in use, with one of the two stations too far away for you to hear
D. Someone with a Full licence may have reserved the frequency, and Full licence holders get priority

Question 22

On which frequency can a Foundation licence holder transmit voice?

A. 14.285MHz
B. 14.100MHz
C. 144.500MHz
D. 145.725MHz

Question 23

Regarding Digital Voice (DV), which statement is most accurate?

A. DV uses its own different band plan
B. You do not need to transmit a callsign, as transmissions are digital
C. You must use the correct CTCSS tone to access a digital repeater
D. There are several formats that may not be compatible

Question 24

What safety device has a wire designed to melt if an excessive current flows through it?

A. Breaker
B. RCBO
C. Fuse
D. Earth

Question 25

Eye protection should be worn when drilling in order to

A. Hold your glasses (if worn) in place
B. Prevent swarf from entering your eyes
C. Allow closer inspection of the work
D. Protect your employer's safety record

Question 26

Antennas or ladders coming into contact with overhead lines can be lethal. A related risk is what?

A. Attracting arcing
B. RF radiation exposure
C. Swarf
D. Exposure to UV energy

MOCK TEST 4

Question 1

Which of the following is not a type of amateur radio licence?

A. Intermediate
B. Beginner
C. Foundation
D. Full

Question 2

You are operating voice-mode on 2m. You change modes and send an SSTV (slow scan TV) image. What are you required to do by your licence?

A. Notify Ofcom
B. Change your callsign suffix
C. Log the change of mode
D. Transmit your callsign

Question 3

The operator of a station who contacts you does not give their callsign, even when asked more than once. What action should be taken?

A. Report the incident to Ofcom
B. Keep asking for the callsign
C. Terminate the contact
D. Note the contact in your log

Question 4

As a licensed radio amateur, the licence requires you

A. Not to offend other radio amateurs
B. Not to operate on inland waterways
C. Not to cause undue interference
D. Not to breach local planning laws

Question 5

Ofcom imposes a limit on the effective radiated power of only one of the following frequencies. Which is it?

A. 51.99MHz
B. 10.110MHz
C. 430.900MHz
D. 439.300MHz

Question 6

What do you need to do to comply with the EMF requirements in the amateur radio licence?

A. Keep a record of your EMF assessments
B. Notify Ofcom of any change to your station equipment and/or antennas
C. Perform emissions tests from time to time
D. Never transmit if members of the general public are nearby

Question 7

The units used to measure Potential Difference, Current, and Resistance are:

A. Watts, Volts and Amps
B. Volts, Amps and Ohms
C. Hertz, Volts and Ohms
D. Ohms, Volts and Watts

Question 8

Which of the following most closely matches the normal range of human hearing?

A. 20Hz to 15kHz
B. 300Hz to 3kHz
C. 3MHz to 30MHz
D. 30MHz to 300MHz

Question 9

What does a DAC do?

A. It represents a digital signal in an analogue format
B. It samples an analogue signal and produces a digital representation of it.
C. It converts Direct Current to Alternating Current
D. It creates a Digital Audio Carrier Wave

Question 10

Which of the following is not a type of modulation?

A. AM
B. FM
C. HF
D. USB

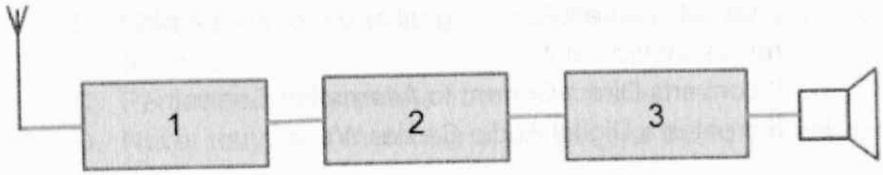
Question 11

In a basic voice transmitter, the frequency of the transmitted signal is determined by what?

A. The A-to-D converter
B. The carrier oscillator
C. The modulator
D. The power amplifier

Question 12

In this diagram, what is the purpose of Box 1?



A. Tuning and RF amplification
B. Removal of the carrier
C. Amplification of the audio
D. Digital to Analogue conversion

Question 13

Which statement is FALSE with respect to feeder?

A. Some RF energy is converted to heat
B. Feeder loss increases with frequency
C. A low-loss feeder should be used at VHF and UHF
D. Coaxial cable carries the signal on the feeder's screen

Question 14

If the feed point impedance of the antenna does not match that of the feeder, what happens?

A. Energy will be reflected down the feeder
B. The SWR at the transmitter may be too low for safe use
C. Energy may leak out at the feed point
D. The antenna may become damaged

Question 15

On a PL-259 plug, the braid should

A. Be connected to the inner pin of the plug
B. Be exactly one-quarter of the antenna's wavelength
C. Be connected to the chassis (outside part) of the connector
D. Be made of a suitable insulator

Question 16

What does it mean if an HF band is referred to as being "open"?

A. It supports Skywave propagation
B. The band is available as no one is using it
C. You can expect Sporadic E and tropospheric ducting
D. Signals are not refracted by the Ionosphere

Question 17

What would be the most effective way to extend the range for transmitting and receiving VHF or UHF signals?

A. Using UHF rather than VHF
B. Using an indoor antenna
C. Increasing the transmitter power
D. Increasing the height of the antenna

Question 18

Your TV's surround sound system is getting interference from local taxis... where could this be coming from?

A. The surround sound amplifier
B. The loudspeaker leads
C. The cabling from your TV to the sound system
D. Any of the above

Question 19

What is meant by the phrase 'electromagnetic compatibility'?

A. The avoidance of interference between items of electronic equipment
B. Matching transmit and receive frequencies correctly
C. The ability of a piece of equipment to withstand interference
D. Reducing SWR to prevent transmitter damage

Question 20

EMC problems have the potential to cause what?

A. Neighbour disputes
B. High SWR
C. Voiding of equipment warranty
D. Damage to the antenna from high current

Question 21

If you call CQ, and someone responds with inappropriate language, what should you do?

A. Ask the offender to watch their language, as children may be listening
B. Advise the offender that you will report them to Ofcom
C. Ignore the offender and do not refer to hearing them
D. Reply in an equally offensive way

Question 22

Which of the following best describes the role of a repeater?

A. To amplify received signals
B. To forward on messages to other amateurs
C. To allow you to repeat messages you've missed
D. To increase the range that a mobile station can reach

Question 23

When giving a signal report, what is the recommended amateur radio format for exchanging reports?

A. Readability, Signal Strength and Tone
B. Received Signal Strength, Station and Time
C. Received Strength, Sound Quality and Type
D. Reception, Smoothness and Text

Question 24

Thinking about amateur radio safety, what is the main risk associated with high current?

A. Electrocution
B. Fire
C. Earth fault
D. RF burns

Question 25

When working at height, you should wear...?

A. Ear protectors
B. Safety goggles
C. A hard hat
D. A hi-viz jacket

Question 26

What is the main health risk resulting from exposure to electromagnetic radiation?

A. Risk of electrocution
B. Heating of body tissue
C. Breathing problems
D. Disorientation

MOCK TEST 5

Question 1

Which of the following is not permitted by the amateur radio licence?

A. Talking about the weather
B. Discussing the makes and models of radios
C. Advertising prices of your home-made antennas
D. Use of codes

Question 2

If you are transmitting using a data mode, what are the requirements regarding giving your callsign?

A. You must speak your callsign before starting to send data
B. The callsign must be sent before you start transmitting
C. The callsign must be sent in the appropriate format
D. Your callsign must be given at the end of the data contact

Question 3

Driving home, you encounter a traffic jam. To help other amateurs, you want to warn them about the problem. Do you...

A. Announce the problem to amateurs on the local repeater
B. Go to a VHF frequency used for local information and announce the problem to amateurs who may be listening
C. Call CQ on 145.500MHz and announce the problem to amateurs
D. None of the above

Question 4

A neighbour believes that you are causing interference. What may you be required to do?

A. Keep a log of your transmissions
B. Make changes to your station setup
C. Restrict how you operate
D. Any of the above

Question 5

Which of the following statements is TRUE for the frequency 3.790MHz?

A. It is shared with other services
B. It is a secondary allocation
C. It is available for satellite communications use
D. It cannot be used within 100km of Charing Cross

Question 6

The amateur radio licence requires you to do what in relation to EMF?

A. Not transmit over 10 Watts EIRP
B. Not expose members of the public to any electromagnetic fields
C. Stay below international EMF limits
D. Stay below international EMF limits and keep a record of compliance assessments

Question 7

How could 5mΩ also be written?

A. 5,000,000 Ohms
B. 0.005 Ohms
C. 0.000005 Ohms
D. 0.00005 Ohms

Question 8

Which unit is used to measure wavelength?

A. Hz
B. kM
C. M
D. m

Question 9

What does ADC stand for?

A. Analogue to Digital Conversion
B. Amplitude Digital Compression
C. Amps and Direct Current
D. Antenna Direct Coupling

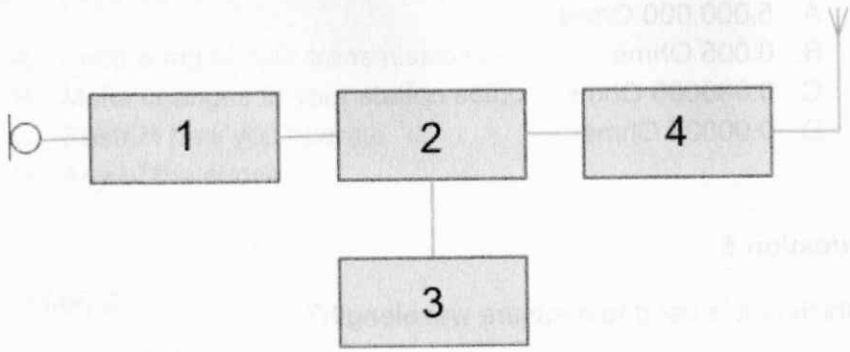
Question 10

Which of the following parts of a transmitter defines the frequency at which the transmitter operates?

A. The oscillator
B. RF power amplifier
C. RF tuning and amplification stage
D. RF modulator

Question 11

In the following diagram, what function is performed by Box 3?



A. RF Power Amplifier
B. Audio Stage
C. Oscillator
D. Modulator

Question 12

What part of a receiver recovers audio from a modulated signal?

A. The Detector
B. The Audio Stage
C. The Oscillator
D. The Modulator

Question 13

Why is coaxial cable widely used as feeder?

A. It is balanced
B. It is a good insulator
C. It is screened
D. It has an impedance of 500 ohms

Question 14

What is EIRP?

A. Antenna gain expressed relative to a theoretical antenna
B. Antenna gain expressed relative to a half-wave dipole
C. Antenna gain expressed relative to an end-fed long-wire
D. Antenna gain expressed relative to a dummy load

Question 15

If your antenna is not a perfect "match", some of the power sent from the transmitter will be reflected back to the transmitter. These are known as what?

A. Carrier Waves
B. Modulation Waves
C. Amplitude Waves
D. Standing Waves

Question 16

Where is the Ionosphere?

A. 40-70km above the surface of the Earth
B. 400-700km above the surface of the Earth
C. 70-400km above the surface of the Earth
D. 70-4000km above the surface of the Earth

Question 17

Which layer can help with extending the range of VHF and UHF signals?

A. The Stratosphere
B. The Atmosphere
C. The Ionosphere
D. The Troposphere

Question 18

What is meant by a piece of equipment's "immunity"?

A. Its ability to work in the presence of strong RF
B. Having its metal parts connected to Earth in case of a short
C. Its ability to stop radio signals from radiating outwards
D. Its ability not to cause unwanted interference to nearby devices

Question 19

What is the function of the RF earth?

A. To protect against lightning strikes damaging your equipment
B. To prevent an electric shock in the event of a fault
C. To provide a path to ground and minimise RF getting into the mains earth
D. To act as a ground plane for an HF antenna

Question 20

If a neighbour complains that you may be causing interference to his/her TV, which of the following options is recommended?

A. Ask your neighbour to contact Ofcom
B. Show your neighbour your current valid Ofcom licence
C. Get some advice from the RSGB EMC committee
D. Wait until they have finished watching TV before transmitting again

Question 21

You want to transmit using a data mode, perhaps to send an image, but you don't know which frequency is the best one to use. What should you look for on the band plan?

A. Any "all modes" frequency
B. The Centre of Activity for the mode in question
C. A beacon frequency
D. The 'Random MS' frequency

Question 22

What is CTCSS?

A. A data mode
B. A code used by radios when accessing an analogue repeater
C. The offset between input and output frequencies on a repeater
D. The organisation responsible for band plans

Question 23

It is recommended that you ask an amateur radio friend to comment on your transmitted audio signal when you start using a new microphone. Why is this?

A. The transmit frequency might need adjusting
B. The microphone may be tuned to the wrong band
C. To prove that it wasn't a waste of money
D. The microphone gain on the transmitter may need to be re-adjusted

Question 24

Special care must be taken with what family of batteries?

A. Nickel-Cadmium
B. Alkaline
C. Lithium
D. Zinc-Carbon

Question 25

Why is a tool belt important when up a ladder?

A. It will help to prevent falling objects
B. It will help with balance and your centre of gravity
C. It can be used to tether you to the ladder
D. It makes tools easier to find

Question 26

On a field day, what is a possible risk?

A. A member of the public touching an antenna that is transmitting
B. Trip hazards relating to coaxial cable routing
C. Short-circuiting a 12V battery
D. All of the above

MOCK TEST 6

Question 1

Steve 2W0QQQ will be visiting a hotel in London and wants to contact M0ABC on 431.500MHz. Which is true?

A. Steve would operate as 2E0QQQ/A
B. Steve would operate as 2W0QQQ/P
C. Steve would operate as 2W0QQQ/A
D. This contact is not permitted

Question 2

You put a call out on 145.500MHz (the FM calling frequency), make contact with someone, and change to a different frequency to have a chat. When are you required to give your callsign?

A. When calling on 145.500MHz and when starting on the new frequency
B. When someone responds to you on 145.500MHz and within the first 5 minutes on the new frequency
C. When calling on 145.500MHz and before leaving 145.500MHz
D. When another amateur asks you for your callsign

Question 3

What does the amateur radio licence say about the use of codes and abbreviations at Foundation?

A. Not permitted, as they may confuse other radio users
B. Permitted, as long as they do not obscure or confuse the meaning of the message
C. Only permitted at times of emergency, on request from a member of the user services
D. Permitted under the supervision of a full licence-holder only

Question 4

Any individual authorised by Ofcom has the right to do what?

A. Close down your amateur radio station
B. Require that you modify your amateur radio equipment
C. Restrict the operation of your amateur radio equipment
D. All of the above

Question 5

Which of the following frequencies cannot be used in central London?

A. 70.31MHz
B. 431.990MHz
C. 439.990MHz
D. 430.990MHz

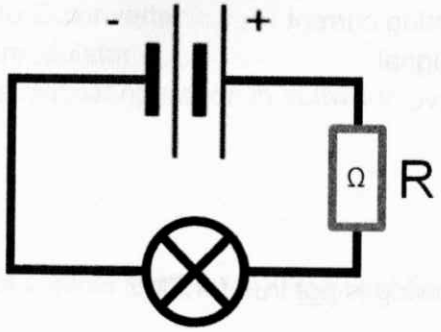
Question 6

Ofcom requires radio amateurs to keep records of what?

A. EMF assessments
B. Contacts outside of the UK
C. Changes to your station equipment
D. Operations away from your Main Station Address

Question 7

This circuit is powered by a 9-volt battery and has a current of 3 amps flowing through it. Assuming that the lamp has no resistance, what is the value of R?



A. 0.33 ohms
B. 3 ohms
C. 30 ohms
D. 300 ohms

Question 8

A radio wave has a length of approximately 4 metres. Which of the following would be a valid 4 metre frequency?

A. 40.3MHz
B. 70.3MHz
C. 144.3MHz
D. 288.3MHz

Question 9

What could be described as a stream of finite values at a specific sampling frequency?

A. A parallel circuit
B. An alternating current
C. A digital signal
D. A sine wave

Question 10

Which of the following is <u>not</u> true for FM?

A. Excessive Frequency Deviation causes interference with adjacent channels
B. Waveform height varies with the volume of the audio
C. A carrier needs to be generated by an oscillator
D. The modulated signal would have varying numbers of waves per second

Question 11

A transmitter must be connected to a correctly matched antenna system. Use of a mismatched antenna system (with a very poor SWR) runs the risk of damage to what?

A. The antenna feed point
B. The feeder
C. The microphone amplifier
D. The RF power amplifier

Question 12

In a Software Defined Radio receiver, what enables all of the radio signals to be sifted into separate frequency components?

A. The D-to-A converter
B. The A-to-D converter
C. The demodulator
D. A mathematical operation in software

Question 13

A long length of coaxial feeder cable may exhibit what?

A. Gain
B. Loss
C. Dummy loads
D. ERP

Question 14

10 Watts EIRP (Effective Isotropic Radiated Power) is equivalent to what value of ERP?

A. 1.6W ERP
B. 6.1W ERP
C. 16.1W ERP
D. 11.6W ERP

Question 15

An antenna correctly connected to a transmitter, but used on the wrong band, could

A. Damage the antenna
B. Reduce the SWR on the feeder
C. Increase the ERP from the antenna
D. Reflect some of the power back down the feeder

Question 16

What effect does ultraviolet radiation normally have on propagation?

A. A negative effect on HF propagation
B. A positive effect on HF propagation
C. A negative effect on VHF propagation
D. A positive effect on VHF propagation

Question 17

The range that your FM signals can reach on VHF/UHF frequencies is mainly dependent on 4 things - antenna height, antenna gain, transmitter power and what else?

A. The amount of UV from the sun reaching the Ionosphere
B. Air quality
C. Lack of obstructions between the transmit and receive antennas
D. The amplitude of the modulated waveform

Question 18

What is the most likely reason that one piece of electrical equipment is more susceptible to interference than another?

A. It has a lower immunity
B. It may not have a mains earth connection
C. It uses AC, not DC voltage
D. It has not been repaired correctly

Question 19

You are contacting someone very close to you. Why might you want to reduce your transmitter power?

A. Less likely to over-modulate
B. Less likely to cause interference
C. To save on their battery
D. Less likely to over-deviate

Question 20

From an EMC perspective, why might it be useful to keep a log of transmissions?

A. To prove you are operating within your licence conditions
B. To have a list of people who can vouch for your contact
C. In case Ofcom asks to see it during an inspection
D. To help identify if you may be the cause of interference

Question 21

When keeping a log, it is recommended that you log the callsign of the station worked, the date of the contact, and what else?

A. Local time, mode, location
B. Distance, operator name and frequency
C. Mode and UTC
D. Operator name, frequency and signal strength

Question 22

On what frequency might you expect to be able to hear signals from the International Space Station?

A. 14.099MHz
B. 144.370MHz
C. 145.200MHz
D. 145.800MHz

Question 23

If you borrow a friend's 5-Watt DV radio, what should you check?

A. Whether your licence allows you to borrow equipment
B. That someone else's callsign is not embedded in software
C. That the radio settings are not in a foreign language
D. That the CTCSS tones are correct for your digital repeater

Question 24

If making changes to your home earthing arrangements, special care is needed. Who should you consult?

A. Your Council Planning Officer
B. Ofcom
C. A competent professional
D. The ICNIRP

Question 25

When is it recommended that eye protection be worn?

A. To prevent solder or flux from splashing into the eyes
B. When erecting an antenna
C. When up a ladder
D. When adjusting the elements of an antenna whilst it is transmitting

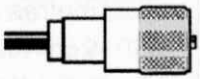
Question 26

Which of the following statements is FALSE:

A. Antennas and feeders must be sited away from overhead power cables
B. Headphones can be dangerous
C. You should not touch antennas when they are transmitting
D. Equipment should be earthed to copper central heating pipes

MOCK TEST 1 – ANSWERS

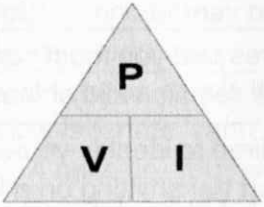
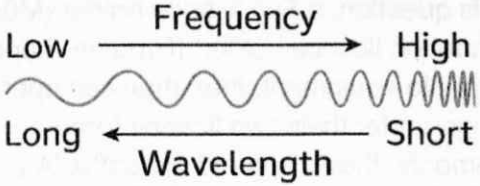
Q.	A.	Reason
1	C	The three UK Amateur Radio licence levels are Foundation, Intermediate and Full.
2	A	You are required to give your callsign when you start transmitting on a new frequency - people monitoring/using that new frequency need to know who you are, and you must be clearly identifiable.
3	A	A 'Net' or 'Network' refers to transmissions to three or more amateurs with whom communication and identification have been established.
4	B	The licence states: " A person authorised by Ofcom may require the Radio Equipment, or any part thereof, to be modified or restricted in use, or temporarily or permanently closed down immediately"
5	D	Refer to the "Foundation Licence Parameters" table in the 4-page exam booklet. Look for the entry "10100-10150kHz" on page 2 (8 lines down). You will see that this is 'Secondary' and limited to 25 Watts.
6	A	Restrictions apply for signals radiated over 10 Watts EIRP (6.1 Watts ERP) to ensure that members of the public are not exposed to high Electromagnetic field (EMF) limits.
7	C	A conductor allows electrons to flow easily, and an insulator does not. Copper and brass are good conductors, as is carbon. Insulators include plastics, rubber, glass and ceramics.
8	B	HF bands are defined as being between 3MHz and 30MHz, so 14.070MHz is the only one in the HF range.
9	D	An Analogue to Digital Converter (ADC) is a device used to sample an analogue signal and produce a digital representation of it.
10	B	Modulation is defined as the process of adding information to a radio frequency carrier. It may help to remember this as the process of mixing audio and RF into a radio signal.
11	B	Too strong an audio signal can cause a signal to overdeviate and interfere with neighbouring channels.

12	C	A detector removes the carrier, leaving the audio signal.
13	C	A balun connects a BALanced antenna (dipole) to UNbalanced coaxial feeder.
14	A	An antenna (when transmitting) converts electrical signals created by the transmitter into radio waves sent out by the antenna. When receiving, an antenna converts radio waves captured by the antenna, and converts them to electrical signals that can be accessed by a radio receiver.
15	C	The PL-259 plug is a common RF connector, usually associated with HF operation. Compared to the 'N'-type plug, this has a protruding centre pin. 
16	B	Layers of conductive gases that are between 70 and 400km above the Earth are known as the ionosphere.
17	C	VHF signals typically travel just beyond the line of sight, hence the need for high transmitter sites for broadcast radio stations.
18	B	If you're not transmitting, that's a clear sign that something else is causing interference to the TV.
19	C	End-fed long wire antennas are unbalanced and often of a random length, so they are most likely to cause EMC problems.
20	A	To get advice on not causing undue interference from the RSGB EMC Committee website.
21	D	You should use the FM Calling frequency to establish contact with someone, then move elsewhere to chat, to leave the Calling frequency free for other users. Chatting about the weather on that channel stops other users from being able to put out calls.
22	C	Refer carefully to the 2m band plan in the 4-page exam booklet on page 3. Check each frequency. Look about halfway down the table for 144.8000MHz "Unconnected Nets – APRS UIView, etc"

23	A	PTT stands for "Push to talk" (when you press the transmit key on a microphone). You need to make sure that your computer does not use PTT to enable the transmitter by accident, otherwise your computer may put your radio into "transmit" without your knowledge.
24	B	The blue wire inside a UK mains plug is the 'neutral'. Brown is 'live', and green/yellow is for the 'earth'.
25	A	With ladders, for every 4 units up, you need to have 1 unit along. For example, a ladder 4 metres up a wall should have its base 1 metre from the wall.
26	C	Antenna elements and other conductors carrying RF should not be touched whilst transmitting, due to the risk of RF burns to the skin.

MOCK TEST 2 – ANSWERS

Q.	A.	Reason
1	A	Ofcom requires that you must confirm that the details shown on the licence remain valid at least once every five years.
2	B	You are required to identify yourself by giving your callsign when you start transmitting on a frequency, and to give your callsign as frequently as is practicable during transmissions.
3	A	In this question, a Full licence holder (M0ABC) visits you, a Foundation licence holder. If you are happy for them to use your radio equipment, then they can operate using their callsign under their own licence terms. Commonly, they'd append the suffix /A ("M0ABC slash A") to let people know they were at an address other than their own home address.
4	B	The licence states: "If required by a person authorised by Ofcom, the Licensee shall keep a permanent record (a "log") of such matters concerning the operation of the Radio Equipment, over such period, and in such form, as the authorised person may require."
5	A	Refer to the "Foundation Licence Parameters" table in the 4-page exam booklet. Look for the entry "14275-14350kHz" on page 2 (10 lines down). The "Status of Amateur Radio Satellite" column for this range says "Not allocated" for satellite use.
6	C	EMF (electromagnetic fields) have to be within International limits regarding exposure to the general public If you answered "Ensuring that signals do not cause interference to nearby electrical devices", that's EMC (electromagnetic compatibility), not EMF (electromagnetic fields)

7	A	The formula for calculating power (in Watts is as follows: Volts x Current (P = V x I) The triangle can help you remember this: 
8	C	As the frequency increases, the wavelength decreases. 
9	C	Analogue signals are constantly changing in amplitude, frequency or both. By comparison, digital signals are a stream of finite values at a specific sampling interval.
10	D	The diagram represents an AM signal - Voice and carrier signals modulated by amplitude.
11	C	Take a look at the transmitter block diagram in the training material. The Power Amplifier is connected to the antenna. (It has nothing to do with tuning, and if you selected 'demodulator', that is in a receiver, not a transmitter)
12	A	The definition of a radio receiver in the exam syllabus is a device designed "to recover information sent from one place to another using electromagnetic radiation.
13	A	Coaxial cable is the common type of feeder used between the transmitter and antenna. It has a single inner core, with an outer screen (usually made of braided copper, to keep the signal inside the cable)
14	C	This is a quarter-wave vertical antenna, commonly used for VHF/UHF. Note the 4 radials at the base, and the lack of a coil (found on 5/8 wave antennas).

15	C	A high SWR can result in a large amount of energy being reflected from the antenna to your transmitter, causing damage. You should reduce the SWR using an AMU (Antenna Matching Unit) to prevent the risk of damage.
16	A	Bands "open" and "close" depending on the time of day. Long-distance communication, known as DX (distant), is all to do with solar radiation acting on the ionosphere. It also helps to try to work a country when they are awake.
17	C	Certain atmospheric conditions, such as 'sporadic E' and 'atmospheric ducting', can extend the range of VHF and/or UHF signals, allowing communication over longer distances than normal.
18	D	A domestic radio receiver has an antenna and is capable of receiving radio signals, so it is more likely to be affected by signals from a nearby radio transmitter than the other listed items.
19	B	FM is less likely to interfere, as the amplitude of the signal is constant. Here's a handy tip for the exam: remember "FM" as "Friendly Modulation"
20	C	The best option here is to offer to log the times of your transmissions, for comparison with the times that your neighbour is experiencing interference, to confirm whether or not you're the problem.
21	A	The optional suffix /P being used at the end of the callsign indicates that the station is at a temporary (/Portable) location. MM7 would be a Foundation callsign operating from Scotland.
22	B	Refer to the "Frequency Allocation Table", which is on page 4 of the 4-page exam booklet. 158.525-160.6MHz is assigned to Land Mobile.
23	C	Most overseas countries do not recognise the UK Foundation licence. If you want to operate overseas, you might want to work towards getting a UK 'Full' licence, which is recognised by many other countries' administrators.

24	C	A clearly-marked 'Off' switch is recommended so that the power can easily be turned off in an emergency (such as electrocution)
25	A	Soldering workstations must be well ventilated to avoid inhalation of solder fumes, which can cause breathing problems, particularly to asthmatics.
26	D	This is a safety question. To avoid RF exposure/burns, you want to avoid people accidentally coming into contact with transmitting antennas and other conductors.

MOCK TEST 3 – ANSWERS

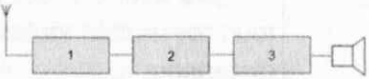
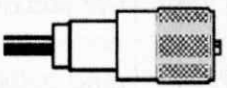
Q.	A.	Reason
1	D	"M" as the second letter of a callsign (e.g. MM7ABC) would indicate that the signal is coming from Scotland
2	B	You are required to identify yourself by giving your callsign when you change mode.
3	B	"General reception" means a message for anyone who might be listening. You can't transmit to listeners (that's broadcasting) - you can only talk to one amateur. The exception is when calling CQ or on an established 'net.
4	D	The Ofcom licence states: "A person authorised by Ofcom may require the Radio Equipment, or any part thereof, to be modified or restricted in use, or temporarily or permanently closed down immediately".
5	A	Refer to the "Foundation Licence Parameters" table on page 2 of the 4-page exam booklet and look up each frequency. Only 7.007MHz is listed (7000-7100kHz). 10.155MHz, 21.475MHz and 24.880MHz do not fit in any of the ranges, and so cannot be used at Foundation.
6	D	The EMF restrictions (relating to public exposure of signals) apply for power over 10 Watts EIRP, which is equal to 6.1 Watts ERP.
7	D	This is the electrical symbol for a fuse.
8	D	Batteries deliver DC, not AC. A secondary battery is rechargeable - it has a reversible chemical process. *Looking for an easy way to remember the difference? A rechargeable battery can be used for a SECOND time.*
9	C	Here, we are talking about digital radios, typically using software. Accordingly, remember for the exam that a computing device is required to process digital signals.

10	C	Single sideband is more efficient than AM (which uses 2 sidebands. From 10MHz upwards, upper sideband is normally used for single sideband operation.
11	A	If you are distorting, you may be over-modulating or over-deviating. Reducing the transmitted audio level by adjusting the microphone gain is recommended.
12	B	This is a receiver box diagram question. After the signal has been selected and the RF carrier removed, the weak audio signal is amplified so that it is loud enough for the speakers or headphones.
13	A	For higher frequencies (such as VHF & UHF), the loss in the feeder is higher than for HF frequencies. To minimise loss, it's important to use a low-loss feeder, especially over a long cable run.
14	B	A gain of 3dB doubles the power. See the conversion table on page 4 of the 4-page exam booklet – 3dB has a multiplier of 2, so 10 Watts x 2 is 20 Watts ERP (effective radiated power)
15	B	If you get a high SWR reading, then there is a mismatch between the transmitter and antenna that can potentially damage the transmitter. You would typically resolve this using an AMU (Antenna Matching Unit)
16	C	The Ionosphere is made up of layers of gas that allow HF signals to be 'bent' back to Earth, enabling worldwide propagation, bouncing signals around the planet.
17	A	For the exam, remember that snow, ice and heavy rain can attenuate signals at UHF and above. *If you answered 'tropospheric ducting', that's more likely to increase the range, not to reduce it.*

18	A	Amateur radio signals are least likely to interfere with a microwave oven. Items such as a CCTV camera, a wi-fi router and a computer monitor are more susceptible to RF interference.
19	C	Of the available choices, a copper stake hammered into the ground would be the most efficient RF earth. Use of the mains earth or a radiator is not recommended for safety reasons. Horizontal wires below the grass are not deep enough to make an effective RF earth.
20	D	All three options (logging, testing and getting advice) are good steps in working to resolve any possible amateur radio interference problems.
21	C	It is important to ask, "Is this frequency in use?" in case there are two stations already using the frequency. One may be transmitting, but too far away for you to hear.
22	A	Refer to the 2m and 20m band plans that are printed in the 4-page exam booklet! 144.500MHz is for SSTV (images), 145.725MHz is a repeater output, and 14.100MHz is a beacon. Therefore, only 14.285MHz is usable for voice.
23	D	There are several digital voice formats that may not be compatible with each other. *If you chose "use the correct CTCSS tones", CTCSS tones are only used on analogue repeaters, not over DV.*
24	C	A fuse is a safety device that contains a wire that is designed to melt if an excessive current passes through it, thus breaking the circuit.
25	B	Eye protection must be worn when using tools such as drills to prevent eye damage from small metal particles (known as swarf).
26	A	A lethal electric shock can result from antennas and ladders touching or attracting arcing from overhead lines.

MOCK TEST 4 – ANSWERS

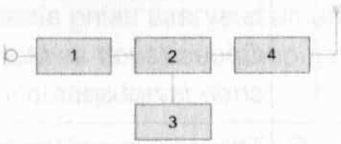
Q.	A.	Reason
1	B	The three UK Amateur Radio licence levels are Foundation, Intermediate and Full.
2	D	You need to make sure your station is identified when you change mode. The wording of the licence says that the callsign must be "given in voice or other appropriate format consistent with the mode of operation." Typically, your callsign will be embedded in the image that you're sending.
3	C	If a station refuses to give a valid amateur radio callsign, this could be an unlicensed operator. The amateur radio licence only allows you to communicate with other licence-holders, so in this case, you should terminate the contact.
4	C	The licence issued by Ofcom requires that the Licensee must ensure that the station is not causing Undue Interference to other radio users.
5	C	Refer to the "Foundation Licence Parameters" table in the 4-page exam booklet. Look up each value. The range 430 to 431MHz has a limit of 25 Watts ERP (last column)
6	A	The licence requires that you make available to Ofcom records to show that you comply with the requirements relating to electromagnetic field exposure. Keep a copy of your assessments.
7	B	Potential Difference (better known as Voltage) is measured in Volts, Current in Amps and Resistance in Ohms.
8	A	The range for normal human hearing is 20Hz to 15,000Hz. For some reason, this is a range you're required to remember for the Foundation exam.

9	A	In a digital radio, a DAC is a Digital to Analogue Converter. This is a device used to represent a digital signal in an analogue format.
10	C	Amplitude Modulation (AM), Frequency Modulation (FM), and Single Sideband (LSB and USB) are types of modulation. HF is not a type of modulation - it refers to the High Frequency part of the radio spectrum.
11	B	The oscillator generates the radio frequency carrier, which defines the transmit frequency. This is then mixed with the audio. See the Transmitter block diagram in the training material for more information.
12	A	Box 1 of the receiver block diagram handles tuning into the signal and amplification of the selected signal. Box 2 is the demodulator Box 3 is the audio amplifier 
13	D	Coaxial cable carries the RF signal on the centre conductor, which is surrounded by an outer screen.
14	A	If there is a mismatch between the transmitter and the antenna system impedance, energy (in the form of standing waves) will be reflected back to the transmitter, potentially causing damage to the transmitter. An SWR meter is used to measure a mismatch.
15	C	On a PL-259 plug, the screen of the coaxial feeder should be connected to the chassis (the outside metal part) of the connector. 
16	A	An "open" band supports Skywave propagation, meaning that signals can be bounced off the ionosphere, supporting contact on that frequency band.
17	D	The most effective way to extend the range for transmitting and receiving VHF or UHF signals is to increase the height of the antenna. This extends the line of sight range.
18	D	Interference can come into the TV through various routes, including the surround sound amplifier, speaker leads, and

		cabling, as well as from the antenna or mains supply.
19	A	Electromagnetic compatibility (EMC) is the avoidance of interference between various pieces of electronic equipment.
20	A	EMC (Electromagnetic compatibility) is all about the prevention of interference. There's a risk that your amateur radio station may cause interference to your neighbour's TV and radio, hence the possibility of disputes.
21	C	If you hear something offensive on amateur radio, the advice is to ignore it and make no reference to it, as the offender may be looking for a reaction.
22	D	Transmitting into a repeater will result in your signal being relayed over a wider area. Repeaters are primarily designed to allow mobile stations to make contact over greater distances.
23	A	When giving signal reports, amateurs use "RST" - Readability, Signal Strength, and Tone. "Tone" is for Morse or Data. A strong signal with very good audio would be "59" (voice) or "599" (data)
24	B	The answer required for the exam is that high voltages carry a risk of electrocution and high currents carry a risk of overheating and fire. *Did you answer "electrocution?" Yes, high current flowing across the body can cause electrocution, but in terms of risk (and getting a mark in the exam), the answer is overheating.*
25	C	For safety reasons, when working at height, you should wear a hard hat.
26	B	The main health effect of exposure to electromagnetic radiation is heating of body tissue, and the eyes are particularly susceptible to damage.

MOCK TEST 5 – ANSWERS

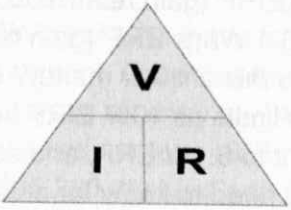
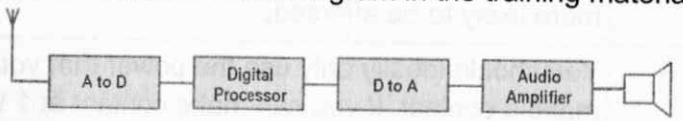
Q.	A.	Reason
1	C	Amateur radio is non-commercial, so you are not allowed to advertise or sell your products over amateur radio or run a business using amateur radio. *Codes (such as Morse code) are allowed, as long as the code is not secret.*
2	C	The wording of the licence says that the callsign must be "given in voice or other appropriate format consistent with the mode of operation." *If you answered A or B, these are invalid, because you cannot transmit your callsign before you start transmitting.*
3	D	The amateur radio licence does not allow you to "Broadcast" (send a message to lots of amateurs or listeners). If you were talking to another amateur, you could mention the traffic problem to them, but you can't broadcast announcements.
4	D	Ofcom has the power to require you to keep a log, make changes to reduce interference or restrict how you operate.
5	A	Refer to the "Foundation Licence Parameters" table in the 4-page exam booklet. Look for the entry "3500-3800kHz" on page 2 (5 lines down). This is listed as "Primary. Shared with other services"
6	D	You are required not to expose the public to EMF (electromagnetic fields) over agreed limits, and you must keep a record of assessments that prove you aren't exposing the public to EMF over those limits.
7	B	milli (with a small 'm') is one-thousandth. Move the decimal place 3 times to the left, so 5mΩ (5 milliohms) is 0.005 Ohms.
8	D	Wavelength is measured in meters. It's a lowercase letter "m" for "metres"

9	A	ADC stand for Analogue to Digital Conversion. For more, see the digital signals section of Technical Basics.
10	A	The oscillator handles the frequency generation, creating a "carrier" on the required radio frequency. The audio signal is then added to the carrier to make the radio signal.
11	C	Box 1: Audio stage Box 2: Modulator Box 3: Oscillator Box 4: RF Power Amp 
12	A	The detector (also known as the demodulator) stage recovers the original information from the modulated signal.
13	C	Coaxial cable is screened, i.e. it has an outer screen that keeps the signal in and interference out.
14	A	EIRP, Effective Isotropic Radiated Power, is a way of expressing antenna gain relative to a theoretical antenna that radiates equally in all directions. Antenna manufacturers typically quote EIRP as it shows a better gain than ERP.
15	D	If your antenna is not a perfect match, some of the power sent from the transmitter will be reflected back to the transmitter. These are known as Standing Waves, measured by an SWR meter.
16	C	For the Foundation exam, remember that the Ionosphere comprises layers of conductive gases at heights between 70 and 400km above the Earth.
17	D	It's the Troposphere. Conditions such as "Sporadic E" or "Tropospheric ducting" can allow VHF/UHF comms over wider-than-expected distances. *If you answered "Ionosphere", that's HF, not VHF/UHF.*
18	A	The ability of any piece of electronic or radio equipment to function correctly in the presence of strong RF signals is known as immunity.
19	C	The function of a good RF earth is to provide a path to

		ground and minimise the chance of radio signals getting into the mains earth.
20	C	The most appropriate option is to get some advice from the RSGB EMC committee. Here's why other answers aren't the best: If Ofcom gets involved, there may be a fee involved, and if you're causing interference, they may require you to modify your station. *Waiting till your neighbour turns off? You're still potentially causing interference to other neighbours, too, so get some advice.*
21	B	You should look for the 'centre of activity' for the mode in question, as this indicates where other stations using the same mode will be operating.
22	B	Continuous Tone-Coded Squelch System is a tone transmitted with your audio signal. When you access a repeater using the correct tone, the repeater knows to "open" and relay your message.
23	D	The microphone gain may need to be adjusted, and having another amateur give you a report on your audio signal helps you to check that your signal is not distorting.
24	C	Lithium batteries, in particular, can cause fire and explosion if not properly treated.
25	A	For safety reasons, when working at height, a tool belt or similar device to carry tools should be used, and that it will help prevent falling objects.
26	D	Touching a transmitting antenna, cable trip hazards and short-circuiting batteries all present risks at an amateur radio field event, so care is needed.

MOCK TEST 6 – ANSWERS

Q.	A.	Reason
1	D	Refer to the Schedule in the 4-page exam booklet when you get any questions about specific frequencies. In the Schedule on page 2 under 431-432MHz, you'll see that this range cannot be used within 100km of Charing Cross in London.
2	A	You need to give your callsign when you start transmitting on a frequency for the first time, so you would need to give your callsign on 145.500MHz as part of your CQ call, and again when you move to the new frequency.
3	B	The use of codes and abbreviations is permitted on amateur radio. Examples include: Morse code, "CQ", "73" and Q codes (like QTH, QSL, QRT, etc) - as these are all public domain radio codes & abbreviations. What's not permitted are SECRET codes or encryption that make the message unintelligible to other radio users.
4	D	The licence states: "The Licensee shall permit any person authorised by Ofcom to inspect the Licence and Radio Equipment, at any and all reasonable times or, when in the opinion of that person an urgent situation exists, at any time to ensure that the Radio Equipment is being used in accordance with the terms of the Licence."
5	B	Refer to the "Foundation Licence Parameters" table in the 4-page exam booklet. The range 431-432MHz has a restriction preventing use within a 100km radius of Charing Cross, London.
6	A	You need to complete an assessment to demonstrate that the public is not exposed to strong EMF (electromagnetic fields), and keep a record of those assessments.
7	B	This is an Ohm's Law question. The formula is V = I x R.

		From the triangle, you can work out that R = V/I. So, the resistance = 9 volts divided by 3 amps, giving the answer of 3 ohms. 
8	B	Use the conversion table in the 4-page exam booklet to calculate this. 4 metres on the left (wavelength) axis converts to roughly 70MHz on the bottom axis
9	C	In digital radio terms, digital signals are a stream of finite values at a specific sampling interval. By contrast, analogue signals are constantly changing in amplitude, frequency or both.
10	B	Waveform height does not vary with the volume of the audio for Frequency Modulation. It is AM signals that vary in amplitude (height). FM signals are of the same height, but vary in frequency.
11	D	The RF Power Amplifier is connected to the antenna and can be damaged by power being reflected back from a mismatched antenna.
12	D	A mathematical operation in the Digital Processor stage sifts the signals into separate frequency components. Refer to the SDR receiver block diagram in the training material. 

13	B	A long length of coaxial feeder cable is likely to exhibit 'loss'. Thicker, high-quality cable helps to reduce loss.
14	B	10 Watts EIRP (gain relative to a theoretical antenna) is equal to 6.1 Watts ERP (gain relative to a dipole). Why does this answer matter? Ofcom quotes EMF exposure limits as 10W EIRP in the licence, which is equivalent to 6.1W ERP, and so this is a common value amateurs need to know for antenna assessments. It is also a common exam question!
15	D	An antenna connected to a transmitter, but used on the wrong band, could reflect some of the power back down the feeder, potentially damaging the transmitter. An AMU (Antenna Matching Unit) can be used to match the antenna impedance.
16	B	Ionisation of the Ionosphere is caused mainly by ultraviolet radiation from the sun. This has a positive effect on HF propagation.
17	C	Obstructions blocking the "line of sight", such as buildings, hills, etc, is the other factor affecting the range of VHF/UHF signals. *If you answered "amount of UV from the sun reaching the Ionosphere", that's for HF, not VHF/UHF signals.*
18	A	The ability of any piece of equipment to function correctly in the presence of strong RF signals is known as "immunity". A lower immunity means the equipment is more likely to be affected.
19	B	You should ideally only use the power that you need to make a contact. If you can make contact at 1 Watt, you don't need to use 10 Watts. By using unneeded power, you could be causing interference to other people who want to use that frequency, as well as possibly causing EMC issues.
20	D	In cases of possible interference, it would be useful to keep a log of transmissions to help identify whether or not you may be the cause of any interference.

21	C	The exam syllabus states that, as a minimum, a log should contain: "date, time (in UTC), mode, and the call sign of station worked"
22	D	Refer to the 2m band plan that is printed on page 4 of the 4-page exam booklet. Almost at the bottom of the 2m band plan, you'll see an entry on 145.800MHz for "FM/DV Space Communications (e.g. ISS) - Space-to-Earth" *If you chose 145.200, that is Earth-to-Space, not Space-to-Earth.*
23	B	It is common for callsigns to be set up in software on a DV radio, and for these to be automatically transmitted. If you don't change the callsign and transmit with someone else's callsign (not under supervision), you are technically in breach of the licence.
24	C	Special care is needed with earthing arrangements, and a competent professional must be consulted prior to making any modifications.
25	A	For safety reasons, to prevent solder or flux from splashing into the eyes, eye protection should be worn whilst soldering.
26	D	This question relates to safety. It is not true that equipment should be earthed to copper central heating pipes. Never use heating pipes as an earth, as this is dangerous.

Appendix A: Exam Reference Material

For your Foundation exam, you'll only be allowed to take one document into the actual exam – that's the 4-page exam booklet, RSGB Reference EX307.

You can download and print this from the following link: **www.sxham.uk/ex307**

We recommend you download and print this 4-page booklet for your revision and get familiar with every aspect of this booklet.

Radio Society of Great Britain

Reference Data
for use in the
Foundation Level Examination

The booklet contains answers to questions that may come up in your exam, as well as in the mocks featured in this booklet, so make sure you know your way around this document. We have produced a detailed video exploring this booklet, and you will find this at: **www.sxham.uk/trainvids**

On the next few pages, you'll find examples of the information in the booklet. The size of the print used in our book may make this hard to read, which is why we recommend you have an A4 printed copy to hand.

A1. Foundation Licence Parameters

Frequency bands	Status of Amateur Service allocation under this licence	Status of Amateur Satellite Service allocation under this licence	Maximum Peak Envelope Power level in Watts (and dB relative to 1 Watt)
135.7-137.8 kHz	Secondary. Available on the basis of non-interference-other services.	Not allocated	1W (0 dBW) ERP
1810-1830 kHz	Primary. Available on the basis of non-interference-other services outside the UK or Crown Dependencies.	Not allocated	25 W (13.98 dBW) 500 mW EIRP airborne
1830-1850 kHz	Primary	Not allocated	25 W (13.98 dBW) 500 mW EIRP airborne
1850-2000 kHz	Secondary. Available on the basis of non-interference-other services.	Not allocated	25 W (13.98 dBW)
3500-3800 kHz	Primary. Shared with other Services.	Not allocated	25 W (13.98 dBW) 500 mW EIRP airborne
7000-7100 kHz	Primary	Primary	25 W (13.98 dBW) 500 mW EIRP airborne
7100-7200 kHz	Primary	Not allocated	25 W (13.98 dBW) 500 mW EIRP airborne
10000-10150 kHz	Secondary	Not allocated	25 W (13.98 dBW)
14000-14250 kHz	Primary	Primary	25 W (13.98 dBW) 500 mW EIRP airborne
14250-14350 kHz	Primary	Not allocated	25 W (13.98 dBW) 500 mW EIRP airborne
18068-18168 kHz	Primary	Primary	25 W (13.98 dBW) 500 mW EIRP airborne
21000-21450 kHz	Primary	Primary	25 W (13.98 dBW) 500 mW EIRP airborne
24890-24990 kHz	Primary	Primary	25 W (13.98 dBW) 500 mW EIRP airborne
28.0-29.7 MHz	Primary	Primary	25 W (13.98 dBW) 500 mW EIRP airborne
50-51 MHz	Primary. Available on the basis of non-interference-other services outside the UK or Crown Dependencies.	Not allocated	25 W (13.98 dBW)
51-52 MHz	Secondary. Available on the basis of non-interference-other services.	Not allocated	25 W (13.98 dBW)
70.0-70.5 MHz	Secondary. Available on the basis of non-interference-other services.	Not allocated	25 W (13.98 dBW)
144-146 MHz	Primary	Primary	25 W (13.98 dBW) 500 mW EIRP airborne
430-431 MHz	Secondary	Not allocated	25 W (13.98 dBW) ERP
431-432 MHz	Secondary. Not available for use within 100km radius of Charing Cross, London (51°30'30"N, 00°07'24"W).	Not allocated	25 W (13.98 dBW) ERP
432-435 MHz	Secondary	Not allocated	25 W (13.98 dBW)
435-438 MHz	Secondary	Secondary	25 W (13.98 dBW)
438-440 MHz	Secondary	Not allocated	25 W (13.98 dBW)
2400-2450 MHz	Secondary. Users must accept interference from ISM users.	Secondary. Users must accept interference from ISM users.	2 W (3 dBW)
5650-5670 MHz	Secondary	Secondary. Earth-space only	2 W (3 dBW)
5670-5680 MHz	Secondary	Not allocated	2 W (3 dBW)
5755-5765 MHz	Secondary. Users must accept interference from ISM users.	Not allocated	2 W (3 dBW)
5820-5830 MHz	Secondary. Users must accept interference from ISM users.	Not allocated	2 W (3 dBW)
10.000-10.125 GHz	Secondary	Not allocated	1 W (0 dBW)
10.225-10.450 GHz	Secondary	Not allocated	1 W (0 dBW)
10.450-10.475 GHz	Secondary	Secondary	1 W (0 dBW)
10.475-10.500 GHz	Not allocated	Secondary	1 W (0 dBW)

A2. 144MHz (2m) Band Plan

Frequency Range	Necessary Bandwidth	UK Amateur Radio Usage
144.000-144.025	2700Hz	**All modes** - including Satellite downlinks
144.025-144.100	500Hz	**Telegraphy** (including EME CW)
		144.050 Telegraphy Centre of Activity
		144.100 Random MS telegraphy calling (Note 1)
144.100-144.150	500Hz	**Telegraphy and MGM**
		EME MGM activity
144.150-144.400	2700Hz	**Telegraphy, MGM and SSB**
		144.250 GB2RS news broadcast and slow Morse
		144.260 See Note 10
		144.300 SSB Centre of Activity
		144.370 MGM MS calling
144.400-144.490		**Propagation Beacons only**
144.490-144.500		**Beacon guard band**
		144.491-144.493 Personal Weak Signal MGM Beacons (BW: 500 Hz max)
144.500-144.794	12 kHz	**All Modes** (Note-8)
		144.500 Image Modes (SSTV, Fax etc)
		144.600 Data Centre of Activity (MGM, RTTY etc)
		144.6125 UK Digital Voice (DV) calling (Note 9)
		144.625-144.675 See Note 10
		144.750 ATV Talk-back
		144.775-144.794 See Note 10
144.794-144.990	12 kHz	**MGM / Digital Communications**
		144.800-144.9875 Digital modes (including unattended)
		144.8000 Unconnected nets - APRS, UiView etc (Note 14)
		144.8125 DV Internet voice gateway (IARU common channel)
		144.8250 DV Internet voice gateway (IARU common channel)
		144.8375 DV Internet voice gateway (IARU common channel)
		144.8500 DV Internet voice gateway (IARU common channel)
		144.8625 DV Internet voice gateway (IARU common channel)
		144.8750 - 144.9125 - Internet Gateways
		144.9250 Digital usage
		144.9375 Digital usage
		144.9500 Digital usage
		144.9625 FM Internet voice gateway
		144.9750, 144.9875 Low power / Adhoc repeater inputs (Note 11)
144.990-145.1935	12 kHz	**FM/DV** RV48 - RV63 Repeater input exclusive (Note 2) (Note 5)
145.200	12 kHz	**FM/DV** Space communications (e.g. I.S.S.) - Earth-to-Space
		145.2000 (Note 4) & (Note 10)
145.200-145.5935	12 kHz	**FM/DV** V16-V47 FM/DV simplex (Note 3) (Note 5) (Note-6)
		145.2250 Internet gateways - and See Note 10
		145.2375 FM Internet voice gateway (IARU common channel)
		145.2500 Used for slow Morse transmissions
		145.2875 FM Internet voice gateway (IARU common channel)
		145.3375 FM Internet voice gateway (IARU common channel)
		145.5000 FM calling (Note 12)
		145.5250 Used for GB2RS news broadcast.
		145.5500 Used for rally/exhibition talk-in
		145.5750, 145.5875 Low power / Adhoc repeater outputs (Note 11)
145.5935-145.7935	12 kHz	**FM/DV** RV48 - RV63 Repeater output (Note 2)
145.800	12 kHz	**FM/DV** Space communications (e.g. I.S.S.) - Space-Earth
145.806-146.000	12 kHz	**All Modes** - Satellite exclusive

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A3. 14MHz (20m) Band Plan

Frequency Range	Necessary Bandwidth	UK Amateur Radio Usage
14,000-14,060 kHz	200 Hz	**Telegraphy - contest preferred**
		14,055 kHz QRS (slow telegraphy Centre of Activity
14,060-14,070	200 Hz	**Telegraphy**
		14,060 kHz QRP (low power) Centre of Activity
14,070-14,089	500 Hz	**Narrow band modes**
14,089-14,099	500 Hz	**Narrow band modes -** automatically controlled data stations (unattended)
14,099-14,101		**IBP - reserved exclusively for beacons**
14,101-14,112	2.7 kHz	**All modes -** automatically controlled data stations (unattended)
14,112-14,125	2.7 kHz	**All modes (excluding digimodes)**
14,125-14,300	2.7 kHz	**All modes -** SSB contest preferred segment
		14,130kHz - digital voice centre of activity
		14,195+- 5 kHz Priority for Dxpeditions
		14,230 kHz - Image Centre of Activity.
		14,285 kHz - QRP Centre of Activity
14,300-14,350	2.7 kHz	**All modes**
		14,300 kHz Global Emergency Centre of Activity

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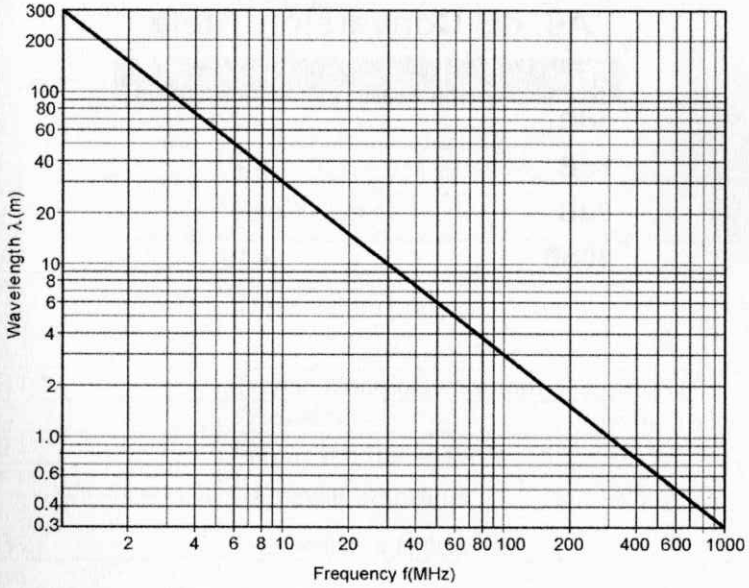
A4. Frequency / Wavelength Conversion Table



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A5. Frequency Allocation Table

Frequency (MHz)	Use
87·5 - 108·0	Broadcasting
108·0 - 117·975	Aeronautical Radionavigation
117·975 - 137·0	Aeronautical Mobile
137·0 - 138·0	Space Operations & Space Research
138·0 - 144·0	Land Mobile
144·0 - 146·0	Amateur & Amateur Satellite
146·0 - 149·9	Mobile (except aeronautical mobile)
149·9 - 150·05	Radionavigation-Satellite
150·05 - 152·0	Radio Astronomy
152·0 - 156·0	Land Mobile
156·0 - 158·525	Maritime Mobile
158·525 - 160·6	Land Mobile
160·6 - 160·975	Maritime Mobile

A6. dB Conversion Table

dB	Multiplier
3dB	x 2
6dB	x 4
9dB	x 8
10dB	x 10

Appendix B: Syllabus Question Breakdown

Exam questions are set in accordance with the RSGB syllabus. The following table shows how we understand the 26 Foundation exam questions to be apportioned. This may not be 100% accurate and is provided here as a guide only.

Syllabus Ref.	Topic	Exam Question
1A1	Nature, licence and callsigns	1
1A2		
1A3		
1A4		2
1B1	Operators and supervision	3
1C1	Messages	
1C2		
1D1	Apparatus, inspection and closedown	4
1D2		
1G1	Electromagnetic fields	5
1H1	Foundation schedule	6
2A1	Fundamental theory	7
2A2		
2B1	Power	
2C1	Resistance	
2C2		
2C4		
2E1	AC theory	8
2E2		
2E7		
2J1	Cells and power supplies	
2F1	Digital signals	9
2F2		
3A1	Transmitter concepts	10
3A2		
3A3		
3A4		
3B1	Transmitter block diagram	11
3C1	Oscillators	
3E1	Mic amp & modulators	
3F1	RF power amplifiers	
3F3		
3G1	Transmitter interference	
3H1	Receiver concepts	12
3H2		
3K1	Demodulation	
3M1	SDR	

4A1	Feeder	13
4A2		
4B1	Baluns	
4C1	Antenna concepts	14
4C2		
4C3		
4C4		
4C5		
4C6		
4D1	Antenna types	
4E1	Standing waves	15
4E2		
4F1	AMU	
4G1	Plugs and sockets	
5A1	Propagation concepts	16
5A2		
5B1	Ionosphere	
5B2		
5C1	VHF / UHF	17
5C2		
5C3		
6A1	EMC concepts	18
6A2		
6A3		
6A4		
6B1	Interference sources / Routes of entry	19
6C1		
6D1	Filtering	
6D4		
6E1	Station design (General)	
6E2		
6F1	Station design (Mobile)	
6F2		
6F3		
6G1	Social aspects	20
6G2		
7A1	Good operating practices and procedures	21
7A2		
7A3		
7A4		
7A5		
7A6		
7A7		
7A8		
7B1	Band Plans	22
7B2		

7C1 7C2	Repeaters	
7D1	Input devices to transmitters	23
7E2	Codes and abbreviations	
7F1	Digital Interfaces	
7G1	Satellites	
7H1	CEPT (overseas)	
8A1 to 8A8	Electricity safety	24
8B1 8B2 8B7	Tools	25
8C1 8C2 8C3	Working at height	
8D1 8D2 8D3 8D4	Working with RF	26
8E1	Lightning	
8F1 8F2 8F3 8F4 8F5	Working mobile and portable	

About The Author

Pete Sipple (callsign M0PSX) obtained his amateur radio licence in 2010, following a lifelong interest in radio. After being a member of various traditional amateur radio clubs, Pete decided to form an online community, Essex Ham. This group aimed to help promote amateur radio, raise awareness for the hobby and provide a useful online resource.

Pete formerly worked in the broadcast radio industry as a producer and engineer. He later developed an interest in mobile comms, becoming a software project manager, as well as a part-time college lecturer.

Following his interest in furthering amateur radio, Pete launched training courses at clubs in Essex, developing award-winning training material. Creating an online training course seemed an obvious next step, hence the creation of the Foundation Online course that has now helped thousands of new amateurs to get started in the hobby.

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And finally...

We hope you have found this book useful and that it helps with your studies.

If you have any feedback about this book, please do let us know, so that we can continue to make improvements and updates. You can send your feedback to bookfeedback@essexham.co.uk

You can find information about updates to Foundation Mock Tests at shortlink: **www.sxham.uk/mockbook**

If you found this book useful, please take a few minutes of your time to rate HamTrain Foundation Mock Tests on the Amazon website, as this will help others discover this guide.

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If you're looking to find out more about the hobby, please do check out the Essex Ham website, where you can also sign up for free as a member of one of the UK's largest online communities – you don't have to be from Essex to join.

You can also sign up for our newsletter for updates on amateur radio. We're also part of HamHub UK, a growing nationwide community of radio amateurs.

Links:

- **Essex Ham:** www.essexham.co.uk
- **HamTrain / Foundation Online:** www.hamtrain.co.uk
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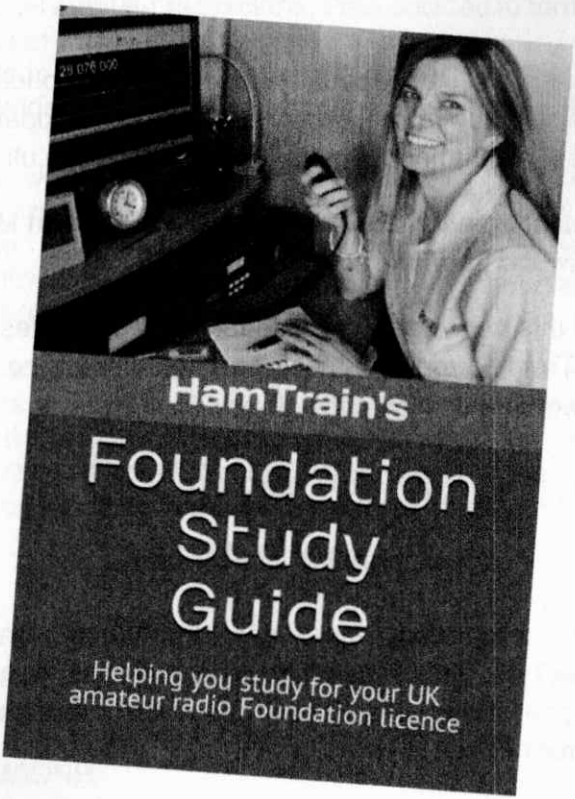

The Foundation Study Guide is designed as a simple revision guide for those studying for their Foundation exam. It covers the entire syllabus and includes extras such as exam tips, a glossary, an FAQ, and another one of our mock tests. It's available as an eBook, in paperback and also as an Audible audiobook.

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Essex Ham's "HamTrain" team has been helping students to prepare for their UK Foundation exam since 2015.

Our Foundation Online course has helped over 14,000 students to get started in amateur radio with its unique mix of syllabus content, course videos, our Foundation Study Guide and a pool of tried and tested mock exam questions.

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